

REMARKS

In the Office Action, the Examiner required a new title; rejected claims 8-10, 14, and 16 under 35 U.S.C. § 102(b) as anticipated by U.S. Patent Application Publication No. 2001/0046738 to Au et al. ("Au"); rejected claims 11-13 under 35 U.S.C. § 103(a) as unpatentable over Au in view of U.S. Patent Application Publication No. 2003/0224574 to Cho et al. ("Cho"); rejected claim 15 under § 103(a) as unpatentable over Au in view of U.S. Patent No. 6,184,151 to Adair et al. ("Adair"); rejected claims 17-19 under § 103(a) as unpatentable over Au in view of U.S. Patent Application Publication No. 2002/0155714 to Suzuki and U.S. Patent Application Publication No. 2003/0235987 to Doshita; and rejected claim 20 under § 103(a) as unpatentable over Au in view of Doshita.¹

In this Amendment, Applicants have amended the title, to provide a title clearly indicative of the invention to which the claims are directed. Applicants have also cancelled withdrawn claims 2-7 without prejudice or disclaimer of the subject matter thereof, and added new claims 21 and 22 to cover further aspects of their invention. As a result, claims 1 and 8-22 remain pending, of which claims 8-22 are presented for examination.

Applicants request that the Examiner approve the new title.

¹ The Office Action contains statements characterizing the related art and the claims. Regardless of whether any such statements are specifically identified herein, Applicants decline to automatically subscribe to any statements in the Office Action.

Applicants respectfully traverse the Examiner's rejection of claims 8-10, 14, and 16 under 35 U.S.C. § 102(b) as being anticipated by Au. In order to properly establish that Au anticipates Applicants' claimed invention under 35 U.S.C. § 102, each and every element of each of the claims in issue must be found, either expressly described or under principles of inherency, in that single reference. Furthermore, "[t]he identical invention must be shown in as complete detail as is contained in the . . . claim." See M.P.E.P. § 2131, quoting *Richardson v. Suzuki Motor Co.*, 868 F.2d 1126, 1236, 9 U.S.P.Q.2d 1913, 1920, (Fed. Cir. 1989).

Regarding the 35 U.S.C. § 102(b) rejection, Au does not disclose each and every element of Applicant's present invention as claimed. For example, independent claim 8 is directed to a method of manufacturing a semiconductor device comprising "forming a first electrode material layer on [a] gate dielectric film; forming a dielectric film having a thickness of 5 Å or more and 100 Å or less on the first electrode material layer; [and] forming a second electrode material layer on the dielectric film." Au at least fails to disclose forming a dielectric film having a thickness of 5 Å or more and 100 Å or less on the first electrode material, and forming a second electrode material layer on the dielectric film.

As shown in Figs. 2B-2D and described in paragraphs [0028]-[0031], Au discloses forming a doped polysilicon layer 44, then forming a "bilayer interpoly dielectric 46" on doped polysilicon layer 44, and forming a doped polysilicon layer 48 on bilayer interpoly dielectric 46. Bilayer interpoly dielectric 46 consists of an oxide layer 46a having a thickness "from about 30 Å to about 70 Å" (paragraph [0030]) and a

tantalum pentoxide layer 46b having a thickness “from about 100 Å to about 1500 Å.” (paragraph [0030]). As a result, the thickness of dielectric 46 is the sum of the thicknesses of layers 46a and 46b, i.e., from about 130 Å to about 1570 Å. Thus, Au discloses a process of forming doped polysilicon layer 44, forming bilayer interpoly dielectric layer 46 on layer 44, wherein dielectric 46 has a thickness of from about 130 Å to about 1570 Å, and forming doped polysilicon layer 48 on dielectric 46. In this regard, the Examiner’s position that only layer 46a corresponds to Applicants’ claimed dielectric layer, is unsupported.

Thus, Au clearly fails to disclose the above noted elements of Applicants’ claim 8 including “forming a dielectric film having a thickness of 5 Å or more and 100 Å or less on the first electrode material layer” and “forming a second electrode material layer on the dielectric film.” The dielectric of Au is disclosed to have a thickness in a range that is entirely outside the claimed range of Applicants’ dielectric film and therefore clearly fails to disclose at least that element of Applicants’ independent claim 8.

Additionally, Au fails to disclose Applicants’ claimed steps of etching the second electrode material layer, etching the dielectric film, and etching the first electrode material layer, “thereby forming a gate electrode.” Instead, Au discloses the construction of a flash memory cell containing a floating gate provided as doped polysilicon layer 44 and a control gate provided as doped polysilicon layer 48. Au’s disclosure of a flash memory cell containing two discrete, functionally different gates is different from and does not anticipate Applicants’ claimed forming of “a gate electrode” that includes forming and etching the first and second electrode material layers, as

required by claim 8. For this reason also, Au fails to disclose each and every element of independent claim 8.

Since Au does not disclose each and every element of independent claim 8, claim 8 is not anticipated by Au and is patentable thereover. Further, none of claims 9, 10, 14, and 16 are anticipated by Au because they all depend from independent claim 8 and incorporate its limitations. Therefore, claims 9, 10, 14, and 16, are also patentable over Au.

Applicants respectfully traverse the Examiner's rejection of claims 11-13 under 35 U.S.C. § 103(a) as unpatentable over Au in view of Cho. In order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, the prior art reference (or references when combined) must teach or suggest all the claim elements. Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify a reference or to combine reference teachings. Third, there must be a reasonable expectation of success. See M.P.E.P. § 2143.

Cho discloses transistor formation for semiconductor devices, but does not disclose or suggest any structure or process corresponding to Applicants' claimed combination including "forming a dielectric film having a thickness of 5 Å or more and 100 Å or less on the first electrode material layer" and "forming a second electrode material layer on the dielectric film," as required by Applicants' claim 8. Additionally, Cho does not disclose "forming a gate electrode" by forming and etching the first and second electrode material layers, as also required by claim 8. Therefore, Cho does not

overcome the above noted deficiencies of Au, so that claims 11-13, which depend from claim 8, are patentable over Au and Cho because those references separately or in combination fail to disclose or suggest all elements of claims 11-13.

Applicants respectfully traverse the Examiner's rejection of claim 15 under § 103(a) as unpatentable over Au and Adair. Adair discloses a method for forming cornered images on a substrate and a photomask formed thereby, but does not disclose or suggest any structure or process corresponding to Applicants' claimed combination including "forming a dielectric film having a thickness of 5 Å or more and 100 Å or less on the first electrode material layer" and "forming a second electrode material layer on the dielectric film," as required by Applicants' claim 8. Additionally, Adair does not disclose or suggest "forming a gate electrode" by forming and etching the first and second electrode material layers, as also required by claim 8. Therefore, Adair does not overcome the above noted deficiencies of Au, so that claim 15, which depends from claim 8, is patentable over Au and Adair because those references separately or in combination fail to disclose or suggest all elements of claim 15.

Applicants respectfully traverse the rejection of claims 17-19 under § 103(a) as unpatentable over Au in view of Suzuki and Doshita. Suzuki discloses a method of conditioning an etching chamber and method of processing a semiconductor substrate using the etching chamber. Doshita discloses a method of fabricating a semiconductor device. However, neither Suzuki nor Doshita disclose or suggest any structure or process corresponding to Applicants' claimed combination including "forming a dielectric film having a thickness of 5 Å or more and 100 Å or less on the first electrode material

layer” and “forming a second electrode material layer on the dielectric film,” as required by Applicants’ claim 8. Additionally, neither Suzuki nor Doshita disclose or suggest “forming a gate electrode” by forming and etching the first and second electrode material layers, as also required by claim 8. Therefore, neither Suzuki nor Doshita overcome the above noted deficiencies of Au, so that claims 17-19, which depend from claim 8, are patentable over Au, Suzuki, and Doshita because those references separately or in combination fail to disclose or suggest all elements of claims 17-19.

Applicants respectfully traverse the rejection of claim 20 under § 103(a) as unpatentable over Au in view of Doshita. As explained above, Au does not disclose or suggest any structure or process corresponding to Applicants’ claimed combination including “forming a dielectric film having a thickness of 5 Å or more and 100 Å or less on the first electrode material layer” and “forming a second electrode material layer on the dielectric film,” as well as “forming a gate electrode” by forming and etching the first and second electrode material layers as required by Applicants’ claim 8. Further, as explained above, Doshita does not overcome these deficiencies of Au. Therefore, claim 20, which depends from claim 8, is patentable over Au and Doshita because those references separately or in combination fail to disclose or suggest all elements of claim 20.

New claims 21 and 22 are also allowable, at least in view of their dependence from patentable claim 8.

In view of the above amendments and remarks, Applicants submit that claims 8-22 are in condition for allowance. A favorable action is requested.

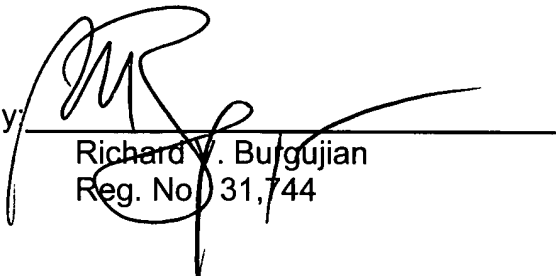
Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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